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ART UNIT	PAPER NUMBER
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

Office Action Summary	**Application No.** 10/679,436	**Applicant(s)** LORE, KENNETH
	Examiner Edna Wong	**Art Unit** 1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 05 February 2007.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) 18-26 is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) 1-17 is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date October 7, 2003.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Election/Restrictions

Applicant's election without traverse of Group **I**, claims **1-17**, in the reply filed on February 5, 2007 is acknowledged.

The requirement is still deemed proper and is therefore made FINAL.

Accordingly, claims **18-26** are withdrawn from consideration as being directed to a non-elected invention.

Specification

The disclosure is objected to because of the following informalities:

page 8, line 12, the words -- (not shown) -- should be inserted after the number "105".

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claims **1, 4, 8-9, 11 and 15** are objected to because of the following informalities:

Claim 1

line 3, it is suggested that the word “by” be amended to the word -- with --.

Claim 4

line 1, the word “step” should be amended to the word -- steps --.

Claim 8

line 1, it is suggested that the word “in” be deleted.

line 2, it is suggested that the word -- plated -- be inserted after the word “chromium”. See claim 5, line 5.

Claim 9

line 1, it is suggested that the word -- plated -- be inserted after the word “chromium”. See claim 5, line 5.

Claim 11

line 1, the word -- the -- should be inserted after the word “wherein”. See claim 12, line 1.

Claim 15

line 1, the word "step" should be amended to the word -- steps --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims **1-17** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

line 9, "the ... powder coat" lacks antecedent basis.

Claim 2

lines 2-4, recites "before the electrostatic spraying step, dipping the nickel-plated component in a chromium bath to produce a chromium plating having a thickness of substantially .0002-.1 mil-inch thick".

It is unclear how the electrostatically sprayed powder coating is over the nickel-plating when a chromium plating is on the nickel-plated component.

Claim 5

line 3, it appears that the "applying" is the same as the electrostatically spraying recited in claim 1, line 8. However, it is unclear if it is. If it is not, then what is the relationship between the applying and the electrostatically spraying?

Claim 7

line 1, "the applying a powder coating" lacks antecedent basis.

line 1, it appears that "a powder coating" is the same as the powder coating recited in claim 1, line 8. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

Claim 10

line 1, "the applying the powder coating" lacks antecedent basis.

line 2, it appears that the "electrostatically spraying" is the same as the electrostatically spraying recited in claim 1, line 8. However, it is unclear if it is. If it is, then it is suggested that the word -- the -- be inserted after the word "includes" in line 1.

Claim 11

line 2, it appears that "a caustic cleaner" is further limiting the cleaning solution recited in claim 1, line 3. However, it is unclear if it is. If it is not, then what is the relationship between the caustic cleaner and the cleaning solution.

Claim 12

line 2, it appears that "a first electro cleaner" is further limiting the cleaning solution recited in claim 1, line 3. However, it is unclear if it is. If it is not, then what is the relationship between the first electro cleaner and the cleaning solution.

Claim 13

lines 1-2, it appears that the "immersing the component in a second electro cleaner" is further limiting "the cleaning the component step *includes*" recited in claim 12, line 1. However, it is unclear if it is. If it is, then it is suggested that the word -- further -- be inserted after the word "step" in line 1.

Claim 14

line 2, "the second electro cleaner step" lacks antecedent basis.

Claim 15

line 2, "the electrostatically sealing step" lacks antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

I. Claims **1, 11-14 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 52-127442** ('442) in combination with **Richardson et al.** (US Patent No. 6,607,614 B1) and **Weinberg et al.** (US Patent No. 2,871,550).

JP '442 teaches a process for plating a component (= a cheap iron material) for a shopping cart or carrying conveyance, the process comprising the steps of:

(a) dipping the component into a nickel bath to produce a nickel-plating having a thickness (= a plating layer of Ni having a thickness of 0.01-0.6 μm); and

(b) electrostatically spraying a powder coating over the nickel-plating (= applied on the plating layer is a transparent layer of powdery epoxy in an electrostatic immersion process),

wherein the nickel-plating and powder coat produces a substantially corrosion (= corrosion resistant) [abstract] and abrasion resistant component (*inherent*).

The applying the powder coating includes electrostatically spraying the powder coating to produce a thickness of about 3-5 mil-inch (= a thickness of 100-300 μm) [abstract].

The powder is applied to the nickel plated component to a thickness of about 3-5 mil-inch (= a thickness of 100-300 μm) [abstract].

The process of JP '442 differs from the instant invention because JP '442 does not disclose the following:

a. Cleaning the component by a cleaning solution, as recited in claim 1.

b. Rinsing the component at least one time to remove the cleaning solution, as recited in claim 1.

c. Rinsing the nickel-plated component at least one time, as recited in claim 1.

d. Wherein cleaning the component step includes immersing the component in _a caustic cleaner_, as recited in claim 11.

e. Wherein the cleaning the component step includes immersing the component in _a first electro cleaner_, as recited in claim 12.

f. Wherein the cleaning step includes immersing the component in _a second electro cleaner_, as recited in claim 13.

g. Immersing the component in _an acid dip_ after the second electro cleaner step, as recited in claim 14.

JP ‘442 teaches that the body is of a cheap iron material (abstract).

Like JP ‘442, Richardson teaches producing a nickel plating on a substrate component. The substrate component is prepared for electroplating by conventional pretreatment procedures and techniques well known in the art. For example, when the substrate component is composed of stainless steel, the substrate component may be:

(i) bead blasted with a fine grit glass bead,

(ii) immersed in _a hot alkaline soak cleaner_ for about 10-15 minutes,

(iii) thoroughly rinsed in deionized water,

(iv) immersed in about 50% vol. hydrochloric acid for approximately 3-5 min.,

(v) thoroughly rinsed in deionized water,

(vi) immersed in _a sulfuric acid etch solution and made anodic_ at about 200-300 A.S.F. for approximately 30-45 sec.,

(vii) thoroughly rinsed in deionized water,

(viii) the _hot alkaline electrocleaner step repeated_,

(ix) thoroughly rinsed in deionized water,

(x) immersed in _50% hydrochloric acid_ for approximately 30-90 sec.,

(xi) thoroughly rinsed in deionized water,

(xii) immersed in Wood's nickel strike (32 oz/gal NiCl and 16 fl. oz/gal HCl, ambient temp.) and made cathodic at a current density of about 50 to about 75 A.S.F for approximately 3-5 minutes and then thoroughly rinsed in deionized water (col. 8, lines 34-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by JP '442 by cleaning the component by a cleaning solution; rinsing the component at least one time to remove the cleaning solution; rinsing the nickel-plated component at least one time; wherein cleaning the component step includes immersing the component in a caustic cleaner; wherein the cleaning the component step includes immersing the component in a first electro cleaner; wherein the cleaning step includes immersing the component in a second electro cleaner; and immersing the component in an acid dip after the second electro cleaner step because these steps are conventional pretreatment procedures and techniques used to prepared a steel substrate component for electroplating as taught by Richardson (col. 8, lines 34-64).

Furthermore, the pretreatment procedures and techniques would have enhanced the adhesion of the nickel plating to the component.

h. Wherein the nickel-plating has a thickness of approximately 0.35-2 mil-inch thick, as recited in claim 1.

JP '442 teaches Ni having a thickness of 0.01-0.6 μm to impart a metallic brightness of gold or silver color (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the nickel-plating thickness described by JP '442 with wherein the nickel-plating has a thickness of approximately 0.35-2 mil-inch thick because the thickness of the nickel-plating is a result-effective variable and one skilled in the art has the skill to calculate the thickness of the nickel-plating that would have determined the success of the desired reaction to occur, i.e., to impart a metallic brightness of gold or silver color (MPEP § 2141.03).

Furthermore, the thickness of the nickel-plating is not deemed a patentable modification. However, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

II. Claims **15 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 52-127442** ('442) in combination with **Richardson et al.** (US Patent No. 6,607,614 B1) and **Weinberg et al.** (US Patent No. 2,871,550) as applied to claims 1, 11-14 and 17 above, and further in view of **Friedersdorf et al.** (US Patent Application Publication No. 2002/0114884 A1).

JP '442, Richardson and Weinberg are as applied above and incorporated herein.

The process of JP '442 differs from the instant invention because JP '442 does not disclose the following:

a. Before the electrostatically sealing step, sealing the nickel plated component with a chemical sealer; and rinsing the sealed nickel plated component at least one time, as recited in claim 15.

JP '442 teaches that the body is of a cheap iron material (abstract).

Like JP '442, Friedersdorf teaches applying a coating to a steel sheet. Friedersdorf teaches that chemical passivation, oiling, edge sealing and packaging with vapor phase corrosion inhibitors are all intended to stabilize the reactivity of the hot-dip coated or electroplated steel sheet surface and isolate it from the ambient environment and moisture. These steps minimize corrosion of the metal coating applied to the steel sheet surface during storage conditions and/or transport to an end user (pages 4-5, [0052]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by JP '442 by before the electrostatically sealing step, sealing the nickel plated component with a chemical sealer; and rinsing the sealed nickel plated component at least one time because this would have stabilized the reactivity of the hot-dip coated or electroplated steel sheet surface, isolated it from the ambient environment and moisture and minimized corrosion of the metal coating applied to the steel sheet surface during storage conditions and/or transport to an end user as taught by Friedersdorf (pages 4-5, [0052]).

b. Before the electrostatically spraying step, drying the nickel plated component by heating to a temperature of approximately 325°F +/-20%, and then cooling the nickel plated component; and after the electrostatically spraying step, curing the nickel plated sprayed component by heating to approximately 425°F +/-20% and then cooling, as recited in claim 16.

Friedersdorf teaches that after a powder coating is applied electrostatically to the preprimed surface, it is then melted and flowed into a continuous polymer coating layer and cured by means of an induction, infrared or convection oven or the combination of infrared and ultraviolet ovens. After curing, the sheet is cooled, if necessary, by quenching, convection air-cooling or water spray cooling. Powder coating techniques eliminates almost all liquid waste, VOC, HAP compounds, and solid waste streams (page 16, [0122]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by JP '442 by before the electrostatically spraying step, drying the nickel plated component by heating to a temperature of approximately 325°F +/-20%, and then cooling the nickel plated component; and after the electrostatically spraying step, curing the nickel plated sprayed component by heating to approximately 425°F +/-20% and then cooling because these are conventional steps in applying a powder coating electrostatically as taught by Friedersdorf (page 16, [0122]).

As to the drying temperature and curing temperature, the drying temperature and curing temperature are result-effective variables and one skilled in the art has the skill to calculate the temperatures that would have determined the success of the desired reaction to occur, i.e., drying the nickel plated component and curing the nickel plated sprayed component (MPEP § 2141.03 and § 2144.05(II)(B)).

Furthermore, it has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed “critical” ranges and Applicant has the burden of proving such criticality; even though Applicant’s modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

Furthermore, the drying temperature would have been dependent upon the drying time, and the curing temperature would have been dependent upon the composition of the powder coating since different powder coating compositions have different curing temperatures.

III. Claims **1-3, 7, 10-14 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Giza et al.** (US Patent No. 4,285,783) in combination with **Richardson et al.** (US Patent No. 6,607,614 B1).

Giza teaches a process for plating a component (= steel or an equally strong metal) [col. 2, lines 57-59] for a shopping cart or carrying conveyance, the process comprising the steps of:

(a) cleaning the component by a cleaning solution (= thoroughly cleaned in conventional and known manners) [col. 3, lines 25-27];

(b) dipping the component into a nickel bath to produce a nickel-plating (col. 3, lines 45-64) having a thickness of approximately 0.35-2 mil-inch thick (= a 1 mil thickness of nickel) [col. 3, lines 40-41]; and

(c) electrostatically spraying a powder coating (= a powdered epoxy applied by an electrostatic spray) [col. 4, lines 45-53] over the nickel-plating,

wherein the nickel-plating and powder coat produces a substantially corrosion (= superior corrosion protection properties) and abrasion resistant component (= superior impact resistance to chipping) [col. 1, lines 46-57].

Before the electrostatic spraying step, dipping the nickel-plated component in a chromium bath to produce a chromium plating (col. 3, line 65 to col. 4, line 6) having a thickness of substantially 0.0002-0.1 mil-inch thick (= a 1/100th of a mil (0.00001 inch) of chromium) [col. 3, lines 41-42].

The process of Giza differs from the instant invention because Giza does not disclose the following:

a. Rinsing the component at least one time to remove the cleaning solution, as recited in claim 1.

b. Rinsing the nickel-plated component at least one time, as recited in claim 1.

c. Wherein cleaning the component step includes immersing the component in a caustic cleaner, as recited in claim 11.

d. Wherein the cleaning the component step includes immersing the component in a first electro cleaner, as recited in claim 12.

e. Wherein the cleaning step includes immersing the component in a second electro cleaner, as recited in claim 13.

f. Immersing the component in an acid dip after the second electro cleaner step, as recited in claim 14.

Giza teaches steel or an equally strong metal (col. 2, lines 57-59).

Like Giza, Richardson teaches producing a nickel plating on a substrate component. The substrate component is prepared for electroplating by conventional pretreatment procedures and techniques well known in the art. For example, when the substrate component is composed of stainless steel, the substrate component may be:

(i) bead blasted with a fine grit glass bead,

(ii) immersed in *a hot alkaline soak cleaner* for about 10-15 minutes,

(iii) thoroughly rinsed in deionized water,

(iv) immersed in about 50% vol. hydrochloric acid for approximately 3-5 min.,

(v) thoroughly rinsed in deionized water,

(vi) immersed in *a sulfuric acid etch solution and made anodic* at about 200-300 A.S.F. for approximately 30-45 sec.,

(vii) thoroughly rinsed in deionized water,

(viii) the *hot alkaline electrocleaner step repeated*,

(ix) thoroughly rinsed in deionized water,

(x) immersed in *50% hydrochloric acid* for approximately 30-90 sec.,

(xi) thoroughly rinsed in deionized water,

(xii) immersed in Wood's nickel strike (32 oz/gal NiCl and 16 fl. oz/gal HCl, ambient temp.) and made cathodic at a current density of about 50 to about 75 A.S.F for approximately 3-5 minutes and then thoroughly rinsed in deionized water (col. 8, lines 34-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by Giza by cleaning the component by a cleaning solution; rinsing the component at least one time to remove the cleaning solution; rinsing the nickel-plated component at least one time; wherein cleaning the component step includes immersing the component in a caustic cleaner; wherein the cleaning the component step includes immersing the component in a first electro cleaner; wherein the cleaning step includes immersing the component in a second electro cleaner; and immersing the component in an acid dip after the second electro cleaner step because these steps are conventional pretreatment procedures and techniques used to prepared a steel substrate component for electroplating as taught by Richardson (col. 8, lines 34-64).

Furthermore, the pretreatment procedures and techniques would have enhanced the adhesion of the nickel plating to the component.

g. Rinsing the nickel-chromium plated component at least one time after the dipping the nickel-plated component in the chromium bath step, as recited in claim 2.

h. Wherein each of the rinsing steps is approximately 0.5-2 minutes, as recited in claim 3.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by Giza by rinsing the nickel-chromium plated component at least one time after the dipping the nickel-plated component in the chromium bath step because rinsing would have prevented the pollution of succeeding baths by the liquid of the preceding baths that becomes entrained on a moving workpiece.

As to wherein each of the rinsing steps is approximately 0.5-2 minutes, the rinsing time is a result-effective variable and one skilled in the art has the skill to calculate the rinsing time that would have determined the success of the desired reaction to occur, i.e., removing the entrained liquid of the preceding baths on the workpiece (MPEP § 2141.03).

i. Wherein the applying a powder coating step takes approximately 1-2 minutes, as recited in claim 7.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the applying a powder coating step described by Giza with wherein the applying a powder coating step takes approximately 1-2 minutes because the applying time is a result-effective variable and one skilled in the art has the skill to calculate the applying time that would have determined the success of the desired reaction to occur, i.e., dependent on the size of the surface area to completely cover with the powder (MPEP § 2141.03).

j. Wherein the applying the powder coating includes electrostatically spraying the powder coating to produce a thickness of about 3-5 mil-inch, as recited in claim 10.

k. Wherein the powder is applied to the nickel plated component to a thickness of about 3-5 mil-inch, as recited in claim 17.

Giza teaches that a thickness of application of epoxy resin ranges from about 0.008 to about 0.010 inches (col. 4, lines 65-66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the thickness of the powder coating described by Giza with wherein the applying the powder coating includes electrostatically spraying the powder coating to produce a thickness of about 3-5 mil-inch; and wherein the powder is applied to the nickel plated component to a thickness of about 3-5 mil-inch because a composite coating would have had certain critical thickness relationships between the successive layers which provide corrosion resistance. Thus, the thickness of the powder coating is a result-effective variable and one skilled in the art has the skill to calculate the powder coating thickness that would have determined the success of the desired reaction to occur, e.g., outdoor corrosion protection (MPEP § 2141.03 and § 2144.05(II)(B)).

IV. Claims **4-6, 8-9 and 15-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Giza et al.** (US Patent No. 4,285,783) in combination with **Richardson et al.** (US Patent No. 6,607,614 B1) as applied to claims 1-3, 7, 10-14 and 17 above, and further in view of **Friedersdorf et al.** (US Patent Application Publication No. 2002/0114884 A1).

Giza and Richardson are as applied above and incorporated herein.

The process of Giza differs from the instant invention because Giza does not disclose the following:

a. Sealing the nickel-chromium plated component with a chemical sealer before the electrostatic spraying step; and rinsing the chemical sealer from the nickel-chromium plated component, as recited in claim 4.

b. Before the electrostatically sealing step, sealing the nickel plated component with a chemical sealer; and rinsing the sealed nickel plated component at least one time, as recited in claim 15.

Like Giza, Friedersdorf teaches applying a coating to a steel sheet. Friedersdorf teaches that chemical passivation, oiling, edge sealing and packaging with vapor phase corrosion inhibitors are all intended to stabilize the reactivity of the hot-dip coated or electroplated steel sheet surface and isolate it from the ambient environment and moisture. These steps minimize corrosion of the metal coating applied to the steel sheet surface during storage conditions and/or transport to an end user (pages 4-5, [0052]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by Giza by sealing the nickel-chromium plated component with a chemical sealer before the electrostatic spraying step; and rinsing the chemical sealer from the nickel-chromium plated component; and before the electrostatically sealing step, sealing the nickel plated component with a chemical sealer; and rinsing the sealed nickel plated component at least one time because this would have stabilized the reactivity of the hot-dip coated or electroplated steel sheet surface, isolated it from the ambient environment and moisture and minimized corrosion of the metal coating applied to the steel sheet surface during storage conditions and/or transport to an end user as taught by Friedersdorf (pages 4-5, [0052]).

c. Drying the nickel-chromium plated component; applying the powder coating after the drying step to the nickel-chromium plated component; and after the drying step, curing the nickel-chromium plated component, as recited in claim 5.

d. Wherein the drying step includes heating the nickel-chromium plated component approximately 5-10 minutes, +/-20%, in a temperature of about 325°F, +/-

20%, and then cooling the nickel-chromium plated component, as recited in claim 6.

e. Wherein in the curing step includes heating the nickel-chromium component to about 425°F for about 15-20 minutes, as recited in claim 8.

f. Cooling the nickel-chromium component, as recited in claim 9.

g. Before the electrostatically spraying step, drying the nickel plated component by heating to a temperature of approximately 325°F +/-20%, and then cooling the nickel plated component; and after the electrostatically spraying step, curing the nickel plated sprayed component by heating to approximately 425°F +/-20% and then cooling, as recited in claim 16.

Friedersdorf teaches that after a powder coating is applied electrostatically to the preprimed surface, it is then melted and flowed into a continuous polymer coating layer and cured by means of an induction, infrared or convection oven or the combination of infrared and ultraviolet ovens. After curing, the sheet is cooled, if necessary, by quenching, convection air-cooling or water spray cooling. Powder coating techniques eliminates almost all liquid waste, VOC, HAP compounds, and solid waste streams (page 16, [0122]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by Giza by drying the nickel-chromium plated component; applying the powder coating after the drying step to the nickel-chromium plated component; and after the drying step, curing the nickel-chromium plated component; wherein the drying step includes heating the nickel-chromium plated component approximately 5-10 minutes, +/-20%, in a temperature of about 325°F, +/-20%, and then cooling the nickel-chromium plated component; wherein the curing step includes heating the nickel-chromium component to about 425°F for about 15-20 minutes; cooling the nickel-chromium component; and before the electrostatically spraying step, drying the nickel plated component by heating to a temperature of approximately 325°F +/-20%, and then cooling the nickel plated component; and after the electrostatically spraying step, curing the nickel plated sprayed component by heating to approximately 425°F +/-20% and then cooling because these are conventional steps used in applying a powder coating electrostatically as taught by Friedersdorf (page 16, [0122]).

As to the drying time and temperature and the curing time and temperature, the drying time and temperature and the curing time and temperature are result-effective variables and one skilled in the art has the skill to calculate the temperatures that would have determined the success of the desired reaction to occur, i.e., drying the nickel plated component and curing the nickel plated sprayed component (MPEP § 2141.03 and § 2144.05(II)(B)).

Furthermore, it has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

Furthermore, the drying temperature would have been dependent upon the drying time, and the curing time and temperature would have been dependent upon the composition of the powder coating since different powder coating compositions have different curing times and temperatures.

Citations

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eyre ("Chromium Plating Brass", *Metal Finishing* (1942), Vol. 40, pp. 192-195 and 199) is cited to teach a plating cycle for brass/Cu/Cr (abstract).

Fink et al. (US Patent No. 2,156,262) is cited to teach a plating cycle for iron/Cr/Ni (page 2, lines 40-60; and Figure).

Beckwith (US Patent No. 2,304,069) is cited to teach a plating cycle for ferrous steel strip/tin (page 1: col. 1, line 36 to col. 2, line 8; and Fig. 1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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